



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Letter of Dr. Alexander Wilcocks on Shadows Without Penumbras, read February 1, 1878.

EVAN HALL, NEAR DONALDSONVILLE, LOUISIANA, }
26th January, 1878.

To the Secretaries of the American Philosophical Society.

I have within the last few days witnessed a phenomenon which I had diligently looked for in vain for more than forty years, viz.: The Production of a Shadow by the light of a Planet.

The body which occasioned the shadow was the planet Venus, and the circumstances under which it was seen were exceptionally favorable.

The Sun having been below the horizon an hour and a half; the Moon not having risen; the atmosphere being very clear, and the planet shining brightly in the south-west, I was passing along a white wall which faced in that direction, and saw distinctly my shadow moving upon the wall.

There are some particulars in which a shadow produced by a planet should differ from the shadows caused by the other celestial luminaries. To our unassisted vision the planets practically occupy mere points in the heavens (their apparent diameters being only an optical illusion).

The Sun and Moon having each of them a diameter which occupies about half a degree of space in the celestial hemisphere, the shadows thrown by these luminaries can never be sharp and well defined. Every such shadow must have a penumbra.

Now in the shadows produced by Venus there is no penumbra. The shadow of a hand distant twelve feet from the wall I found perfectly sharp and well defined; and more striking still, the shadows of the twigs of a Pecan tree distant fifty yards were also sharp. These last shadows were faint from the effect of the diffused light from the sky, which illumined the wall.

When in sunlight two objects are made to approach each other, there appears between their shadows a dark process which connects the two before the bodies actually come together.

In the shadows produced by Venus nothing of the kind takes place.

In sunlight a man's finger held twelve feet from a screen has a shadow consisting entirely of penumbra. The umbra has vanished.

The shadows produced by Venus are exclusively umbra.

The above observations and reflections may have been made by others; if so, they have not fallen under my notice.

P. S.—A few daws after the above remarks were penned, when the new moon was beginning to throw visible shadows, I had an opportunity to compare the strength of these with those produced by Venus.

The shadows caused by the primary planet were sharper and stronger than those thrown by our satellite.

Very Respectfully yours,

ALEXANDER WILCOCKS.